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L3: Entry 68 of 200   File: USPT   May 7, 2002

DOCUMENT-IDENTIFIER: US 6385195 B2
TITLE: Enhanced interworking function for interfacing digital cellular voice and fax protocols and internet protocols

Abstract Text (1):
An enhanced interworking function (E-IWF) supports a method of direct digital interworking between a radio telecommunications network and standard Internet Protocol (IP) routers. A general purpose interworking function performs speech transcoding and data interworking. A specific translation interworking function translates directly between mobile-specific voice encoding and Voice-over-IP protocols, and between mobile-specific fax encoding and Fax-on-IP protocols. The method provides interworking between cellular protocols in a time division multiple access (TDMA) cellular telecommunications network, and Internet protocols being utilized by an Internet End-System (ES) or fax gateway.

Application Filing Date (1):
19970721

Brief Summary Text (19):
In yet another aspect, the present invention is a method of interworking between cellular fax protocols and Internet protocols, the cellular fax protocols being utilized by a mobile station in a time division multiple access (TDMA) cellular telecommunications network to transmit an image to a far-end fax machine via the Internet, and the Internet protocols being utilized by a fax gateway. The method begins by originating a mobile fax call, setting up a Radio Link Protocol (RLP) for communicating between the mobile station and the cellular telecommunications network, and scanning, encoding, and compressing the image into a fax data stream. This is followed by sending a sequence of digitized call establishment signals between an enhanced interworking function (E-IWF) in the cellular telecommunications network and the far-end fax machine, formatting the fax data stream into User Datagram Protocol (UDP) frames and segmenting the frames into Internet Protocol (IP) datagrams, and transmitting the UDP/IP datagrams over the Internet to the fax gateway. The method then performs the steps of converting, in the fax gateway, the UDP/IP datagrams into fax modem voiceband information, sending the fax modem voiceband information to the far-end fax machine, and recreating the image in the far-end fax machine.

CLAIMS:

14. A method of interworking between standard cellular fax protocols and Internet protocols, said cellular fax protocols being utilized by a mobile fax terminal in a time division multiple access (TDMA) cellular telecommunications network to transmit an image to a far-end fax machine via the Internet, and said Internet protocols being utilized by a fax gateway, said method comprising the steps of:

originating a mobile fax call from the mobile fax terminal;

setting up a Radio Link Protocol (RLP) for communicating between said mobile fax terminal and said cellular telecommunications network;

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scanning, encoding, and compressing the image into a standard fax data stream by the mobile fax terminal;

sending a sequence of digitized call establishment signals between an enhanced interworking function (E-IWF) in the cellular telecommunications network and the far-end fax machine;

formatting, in the E-IWF, the fax data stream into User Datagram Protocol (UDP) frames and segmenting the frames into Internet Protocol (IP) datagrams;

transmitting the UDP/IP datagrams over the Internet from the E-IWF to the fax gateway;

converting, in the fax gateway, the UDP/IP datagrams into fax modem voiceband information;

sending the fax modem voiceband information from the fax gateway to the far-end fax machine; and

recreating the image in the far-end fax machine.

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